

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A heat exchanger tube expanding apparatus for a heat exchanger having a plurality of laminated radiating fins ~~having with~~ penetrating apertures on peripheral edge portions of which ~~where~~ fin collars are disposed upright and having in which substantially U-shaped hairpin tubes are inserted through the penetrating apertures in a direction of lamination of the radiating fins, said tube expanding apparatus integrally securing the plurality of radiating fins by expanding straight portions of the hairpin tubes to place the hairpin tubes in pressure contact with the fin collars, said tube expanding apparatus comprising:

a receiver platform;

mandrels, each mandrel having a billet on a leading end;

a reciprocating actuator for supporting rear ends of said mandrels, said reciprocating actuator being supported to reciprocate in an axial direction of straight portions of the hairpin tubes;

a pressure drive source for raising and lowering said reciprocating actuator and expanding the straight portions of the hairpin tubes by pressing said billets into the straight portions of the hairpin tubes;

hairpin receivers for supporting curved portions of the hairpin tubes;

a fin receiver disposed at an end near the curved portions of the hairpin tubes for supporting an end portion of the plurality of laminated radiating fins; and

~~raising and lowering means for raising and lowering a passive elastic body disposed between said fin receiver in the axial direction of the straight portions of the hairpin tubes and said receiver platform,~~ wherein said ~~raising and lowering means~~ passive elastic body lowers said fin receiver to a predetermined position as said mandrels descend and said billets begin to be inserted into the hairpin tubes.

Claims 2-4 (Cancelled).

5. (Currently Amended) The heat exchanger tube expanding apparatus according to Claim 1, wherein said ~~raising and lowering means is an~~ passive elastic body disposed between said fin receiver and a receiver platform is a coil spring.

6. (Currently Amended) The heat exchanger tube expanding apparatus according to Claim ~~5~~ 1, wherein ~~the~~ said passive elastic body is a foamed tubular resin body.

7. (Currently Amended) ~~The~~ A heat exchanger tube expanding apparatus ~~according to Claim 1, further~~ for a heat exchanger having a plurality of laminated radiating fins with penetrating apertures on peripheral edge portions where fin collars are disposed upright and in which substantially U-shaped hairpin tubes are inserted through the penetrating apertures in a direction of lamination of the radiating fins, said tube expanding apparatus integrally securing the plurality of radiating fins by expanding straight portions of the hairpin tubes to place the hairpin tubes in pressure contact with the fin collars, said tube expanding apparatus comprising:

a receiver platform;

mandrels, each mandrel having a billet on a leading end;

a reciprocating actuator for supporting rear ends of said mandrels, said reciprocating actuator being supported to reciprocate in an axial direction of straight portions of the hairpin tubes;

a pressure drive source for raising and lowering said reciprocating actuator and expanding the straight portions of the hairpin tubes by pressing said billets into the straight portions of the hairpin tubes;

hairpin receivers for supporting curved portions of the hairpin tubes;

a fin receiver disposed at an end near the curved portions of the hairpin tubes for supporting an end portion of the plurality of laminated radiating fins;

raising and lowering means for raising and lowering said fin receiver in the axial direction of the straight portions of the hairpin tubes, wherein said raising and lowering means lowers said fin receiver to a predetermined position as said mandrels descend and

said billets begin to be inserted into the hairpin tubes; and
vibrating means for vibrating said hairpin receivers.

8. (Currently Amended) The heat exchanger tube expanding apparatus according to Claim 7, wherein said vibrating means comprises an ultrasonic vibrator disposed between said hairpin receivers and ~~a~~ said receiver platform.